# Abstracts

## Fast frequency sweep technique for the efficient analysis of dielectric waveguides

*S.V. Polstyanko, R. Dyezij-Edlinger and Jin-Fa Lee. "Fast frequency sweep technique for the efficient analysis of dielectric waveguides." 1997 Transactions on Microwave Theory and Techniques 45.7 (Jul. 1997 [T-MTT]): 1118-1126.*

This paper describes a new approach to spectral response computations of an arbitrary two-dimensional (2-D) waveguide. This technique is based on the tangential-vector finite-element method (TVFEM) in conjunction with the asymptotic waveform evaluation (AWE) technique. The former is used to obtain modes characteristics for a central frequency, whereas the latter employs an efficient algorithm to compute frequency moments for each mode. These moments are then matched via Pade approximation to a reduced-order rational polynomial, which can be used to interpolate each mode over a frequency band with a high degree of accuracy. Furthermore, the moments computations and subsequent interpolation for a given set of frequency points can be done much more rapidly than just simple simulations for each frequency point.

❑ Return to main document.